



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/715,897

11/18/2003

Per Andersson

HO-P02894US0

1386

26271 7590 09/28/2007  
FULBRIGHT & JAWORSKI, LLP  
1301 MCKINNEY  
SUITE 5100  
HOUSTON, TX 77010-3095

EXAMINER

HANDY, DWAYNE K

ART UNIT

PAPER NUMBER

1743

MAIL DATE

DELIVERY MODE

09/28/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



UNITED STATES PATENT AND TRADEMARK OFFICE

---

Commissioner for Patents  
United States Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/715,897  
Filing Date: November 18, 2003  
Appellant(s): ANDERSSON, PER

**MAILED  
SEP 28 2007  
GROUP 1700**

---

For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 4/5/07 appealing from the Office action mailed 8/10/06.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

No amendment after final has been filed.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

6,591,852	MCNEELY et al.	7-2003
6,063,589	KELLOGG et al.	5-2000

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3 and 7-12 are rejected under 35 U.S.C. 102(e) as being anticipated by McNeely et al. (6,591,852). McNeely teaches a microfluidic device that uses passive valves to control fluid flow in the channels. In the columns 13 and 14 (Example 1), McNeely teaches the use of passive valves to mix samples. This is illustrated in Figures 2A-2D. The Examiner considers channel “1” from the Figures to be a trunk

Art Unit: 1743

channel as recited in the instant claim. Channel "1" has an inlet and outlet and is connected to channel "2" - the branch channel. As shown in the cited Figures, a first fluid flows through the trunk channel (1) to point "a" and then flows into the branch channel (2) until it reaches stopping point "b". Once the first fluid reaches "b", fluid flow in this channel stops. When a second fluid is flowed through the trunk channel, the second fluid continues past point "a" through the trunk channel (1) until it passes the other side of point "b" in the trunk channel. Once fluid in the trunk channel reaches point "b", the stopping means at "b" is overcome and the fluid from the trunk (1) and branch (2) channels are mixed. The Examiner submits that the configuration shown in Figures 2A-2D meets the arrangement of trunk channel, branch channel, inlet, outlet and fluid impedance required in claim 1 (claim 1, lines 6-10). The contents of the McNeely shows multiple branched chambers and channels in Figures 3A-3D, 5A-5D, 7A-7D and 10A-10C. A branch channel vent is shown in Figures 11A-E. An additional cover layer is shown in Figures 9A-9D. The use of polymers to make the device is disclosed in column 6.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1743

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over McNeely et al. (6,591,852) in view of Kellogg et al. (6,063,589). McNeely teaches every element of claims 4-6 except for the branch channel volume. McNeely does not specify a branch channel volume. Kellogg teaches a microfluidic device comprised of a microfluidic channel network on a disc. The microchannel network includes measuring capillaries (202, 302, 402) near the entry ports (201, 301, 401) for measuring fluids as they enter the device. The capillaries hold up to 50 uL of fluid to be metered into the next chamber. It would have been obvious to one of ordinary skill in the art to use the metering capillary volume from the device of Kellogg with the branch channel of McNeely. McNeely teaches the use of a branch channel and passive valves to mix fluids in a microfluidic network. One would add the metering capillary volume from Kellogg in order to measure out specific microliter and nanoliter volumes for mixing.

#### **(10) Response to Argument**

Appellant has argued that McNeely does not meet the requirements of claim 1 and is instead the opposite of the present invention since the present

invention requires that the trunk channel be separately emptied while liquid is withheld in the branch channel (page 6 of submitted Appeal Brief, lines 1-16). The Examiner respectfully disagrees and submits that Appellant is arguing beyond the scope of the claim as written. Claim 1 as written does not require that the trunk channel **be empty** while the branch channel remains filled. Claim 1 recites an arrangement of elements that "permit the fluidic contents of the trunk channel **to be flushed through the fluidic outlet** while the branch channel remains substantially filled".

The Examiner submits that flushing the current contents of the trunk channel does not require that the channel be emptied. Therefore, the contents of the trunk channel – contained in channel '1' between point 'a' and 'b' - may be **flushed** simply by adding an additional volume of fluid through the fluid inlet large enough to displace the current contents of the trunk and branch channels. If one were to take the scenario shown in Figure 2D where stopping means 'b' has just failed and allowed the fluid from the branch channel in to the trunk channel at point 'b' and provide an additional volume of fluid through the inlet substantially larger than the volumes of the branch and trunk channels then the current contents of the trunk channel will be forced through the fluidic outlet. In addition, the Examiner presumes that since the valve function **has** been destroyed at point 'b', then the additional fluid flowing through the trunk channel would also enter the branch channel at point 'a' and flow through the branch channel. This would meet the limitation from claim 1 which states that the branch channel remain substantially filled while the contents of the trunk channel is flushed.

Appellant has also argued that McNeely does not relate to a device for metering a microfluidic plug of fluid, therefore McNeely does not teach a device for metering fluids (Appeal Brief, page 7, lines 1-9). The Examiner submits that metering is an intended use of the device. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. The Examiner submits that splitting an amount of fluid and filling a channel having a known volume with that fluid would allow one to measure the amount of fluid in the channel.


**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Dwayne K. Handy

  
Jill Warden  
Supervisory Patent Examiner  
Technology Center 1700

Conferees:

Jill A. Warden 

Patrick Ryan 